

Tunable Semiconductor Diodes

Abstract

A diode structure that facilitates tuning the breakdown voltage of the diode structure, and a method for forming and operating the diode structure. In a P- substrate, a N+ layer is implanted. The N+ layer has an opening whose size affects the breakdown voltage of the diode structure. Upon the N+ layer, an N- layer is implanted in the substrate. Then, a P+ region is formed to serve as an anode of the diode structure. An N+ region can be formed on the surface of the substrate to serve as a cathode of the diode structure. By changing the size of the opening in the N+ layer during fabrication, the breakdown voltage of the diode structure can be changed (tuned) to a desired value.